Claim Amendments:

Please amend the claims as detailed in the attached Marked-Up Version and Clean Version follows:

~~[e1]~~ 1. (Currently Amended) A warning system for a host vehicle having a driver-side, a passenger-side, a front end, and a rear end, said warning system comprising:

a first magneto-resistive sensor coupled to a first portion of the driver-side of the host vehicle, said first magneto-resistive sensor adapted for sensing a first magnetic field variation in a first sensor area near the host vehicle and generating a first sensor signal therefrom;

a second magneto-resistive sensor coupled to a first portion of the passenger-side of the host vehicle, said second magneto-resistive sensor adapted for sensing a second magnetic field variation in a second sensor area near the host vehicle and generating a second sensor signal therefrom;

a third magneto-resistive sensor coupled to a second portion of the driver-side of the host vehicle, said third magneto-resistive sensor adapted for sensing a third magnetic field variation in a third sensor area near the host vehicle and generating a third sensor signal therefrom;

a fourth magneto-resistive sensor coupled to a second portion of the passenger-side of the host vehicle, said fourth magneto-resistive sensor adapted for sensing a fourth magnetic field variation in a fourth sensor area near the host vehicle and generating a fourth sensor signal therefrom; and

a controller coupled to the host vehicle receiving at least one of said first sensor signal, said second sensor signal, said third sensor signal, or said fourth sensor signal, said controller generating a signal for activating a vehicle system in response to said at least one of said signals.

~~[e2]~~ 2. (Currently Amended) The system of claim 1 further comprising a vehicle bus receiving various vehicle control signals and generating therefrom a

vehicle bus signal, wherein said controller generates said signal for activating said vehicle system as a function of said vehicle bus signal.

~~[c3]~~ 3. (Currently Amended) The system of claim 2, wherein said vehicle bus receives at least one of a vehicle type information signal, a vehicle speed signal, an RPM signal, a heading of host vehicle signal, a location of vehicle signal, a host vehicle directional signal, a steering wheel angle signal, or a brake status signal and generates said vehicle bus signal as a function of said at least one of said signals.

~~[c4]~~ 4. (Currently Amended) The system of claim 1 further comprising a vehicle warning interface receiving said signal for activating said vehicle system from said controller, said vehicle warning interface activating said vehicle system in response to said signal for activating said vehicle system.

~~[c5]~~ 5. (Currently Amended) The system of claim 4, wherein said vehicle system comprises at least one of a dashboard light, a light guide, an LED, a radio, a speaker, a pre-crash warning system, a heads-up display, or a passive restraint system.

~~[c6]~~ 6. (Currently Amended) The system of claim 1 further comprising a fifth magneto-resistive sensor coupled to a third portion of the driver-side of the host vehicle, said fifth magneto-resistive sensor sensing a fifth magnetic field variation in a fifth sensor area and generating a fifth sensor signal therefrom; and

a sixth magneto-resistive sensor coupled to a third portion of the passenger-side of the host vehicle sensing a sixth magnetic field variation in a sixth sensor area and generating a sixth sensor signal therefrom,

wherein said controller receives at least one of said first sensor signal, said second sensor signal, said third sensor signal, said fourth sensor signal, said fifth sensor signal or said sixth sensor signal, said controller generating said signal for activating said vehicle system in response to said at least one of said signals.

~~[c7]~~ 7. (Currently Amended) The system of claim 6, wherein said first portion of said driver side and said first portion of said passenger side comprise portions near the front end, said second portion of said driver side and said second portion of said passenger side comprise portions between the front end and the rear end, and said third portion of said driver side and said third portion of said passenger side comprise portions near the rear end.

~~[c8]~~ 8. (Currently Amended) The system of claim 1, wherein said first sensor is coupled to at least one of an area near a rear of the vehicle, an area near a middle of the vehicle, an area near a front of the vehicle, a trunk lid, a tailgate, a hood, a bumper, an area above tires of the vehicle, or an area within vehicle side panels.

~~[c9]~~ 9. (Currently Amended) The system of claim 1, wherein said controller further comprises at least one of a signal conditioning algorithm, a temporal and signal strength correlation algorithm, a vehicle state definition algorithm, or a countermeasure state definition algorithm for generating said signal for activating said vehicle system.

~~[c10]~~ 10. (Currently Amended) The system of claim 9, wherein said temporal and signal strength correlations algorithms is used in conjunction with a threshold comparison to assess a probability of an accident.

~~[c11]~~ 11. (Currently Amended) A method for operating a lane change aid detection system for a host vehicle comprising:

sensing magnetic field changes, caused by a target object in or near a vehicle destination lane, within a sensor array having a detection range covering an area adjacent a full near zone of the host vehicle;

processing at least one algorithm as a function of said magnetic field changes; and

activating a countermeasure in response to signals indicating a target vehicle in or near said vehicle destination lane as a function of said processing of said at least one algorithm.

~~[c12]~~ 12. (Currently Amended) The method of claim 11 further comprising receiving a vehicle control signal;

generating a vehicle bus signal from said vehicle control signal; and

processing said at least one algorithm as a function of said vehicle bus signal.

~~[c13]~~ 13. (Currently Amended) The method of claim 12, wherein said vehicle bus receives at least one of a vehicle type information signal, a vehicle speed signal, an RPM signal, a heading of host vehicle signal, a location of vehicle signal, a host vehicle directional signal, a steering wheel angle signal, or a brake status signal and generates said vehicle bus signal as a function of said at least one of said signals.

~~[c14]~~ 14. (Currently Amended) The method of claim 11, wherein processing further comprises determining required countermeasures necessary to reduce a likelihood of an accident.

~~[c15]~~ 15. (Currently Amended) The method of claim 11, wherein processing further comprises processing a magnetic signal conditioning algorithm for filtering and smoothing said magnetic field signature.

~~[c16]~~ 16. (Currently Amended) The method of claim 11, wherein processing further comprises processing a temporal and signal strength correlation algorithm for analyzing said magnetic field signature for determining a proximity and size of said target object.

~~[c17]~~ 17. (Currently Amended) The method of claim 11, wherein processing further comprises processing a vehicle state definition algorithm whereby a state of the host vehicle in relation to said target object is determined.

~~[c18]~~ 18. (Currently Amended) The method of claim 11, wherein processing further comprises processing a countermeasure state definition algorithm for determining whether a countermeasure is required and which countermeasure may be required.

~~[c19]~~ 19. (Currently Amended) A lane change aid detection system for a host vehicle comprising:

a first array of magneto-resistive sensors coupled along a driver-side of the host vehicle and sensing a first array of sensor areas covering a near driver-side area extending at least a length of said driver-side and an area adjacent thereto, said first array of magneto-resistive sensor sensing a first magnetic field variation in said first array of sensor areas, at least one of said first array of magneto-resistive sensors generating a first sensor signal therefrom;

a second array of magneto-resistive sensors coupled along a passenger-side of the host vehicle and sensing a second array of sensor areas including a near passenger-side area covering at least a length of said passenger-side and an area adjacent thereto, said second array of magneto-resistive sensor sensing a second magnetic field variation in said second array of sensor areas, at least one of said second array of magneto-resistive sensors generating a second sensor signal therefrom;

a vehicle bus receiving various vehicle control signals and generating therefrom a vehicle bus signal;

a vehicle warning interface receiving a signal for activating said vehicle system, said vehicle warning interface activating said vehicle system in response to said signal for activating said vehicle system; and

a controller coupled to the host vehicle receiving said first sensor signal, said second sensor signal, and said vehicle bus signal, said controller generating said

signal for activating a vehicle system in response to said vehicle bus signal and at least one of said first sensor signal or said second sensor signal.

~~[c20]~~ 20. (Currently Amended) The system of claim 19, wherein said vehicle system comprises at least one of a dashboard light, a light guide, an LED, a radio, a speaker, a pre-crash warning system, a heads-up display, or a passive restraint system.

Claims

1 A warning system for a host vehicle having a driver-side, a passenger-side, a front end, and a rear end, said warning system comprising:

a first magneto-resistive sensor coupled to a first portion of the driver-side of the host vehicle, said first magneto-resistive sensor adapted for sensing a first magnetic field variation in a first sensor area near the host vehicle and generating a first sensor signal therefrom;

a second magneto-resistive sensor coupled to a first portion of the passenger-side of the host vehicle, said second magneto-resistive sensor adapted for sensing a second magnetic field variation in a second sensor area near the host vehicle and generating a second sensor signal therefrom;

a third magneto-resistive sensor coupled to a second portion of the driver-side of the host vehicle, said third magneto-resistive sensor adapted for sensing a third magnetic field variation in a third sensor area near the host vehicle and generating a third sensor signal therefrom;

a fourth magneto-resistive sensor coupled to a second portion of the passenger-side of the host vehicle, said fourth magneto-resistive sensor adapted for sensing a fourth magnetic field variation in a fourth sensor area near the host vehicle and generating a fourth sensor signal therefrom; and

a controller coupled to the host vehicle receiving at least one of said first sensor signal, said second sensor signal, said third sensor signal, or said fourth sensor signal, said controller generating a signal for activating a vehicle system in response to said at least one of said signals.

2 The system of claim 1 further comprising a vehicle bus receiving various vehicle control signals and generating therefrom a vehicle bus signal, wherein said controller generates said signal for activating said vehicle system as a function of said vehicle bus signal.

3 The system of claim 2, wherein said vehicle bus receives at least one of a vehicle type information signal, a vehicle speed signal, an RPM signal, a heading of host vehicle signal, a location of vehicle signal, a host vehicle directional signal, a steering wheel angle signal, or a brake status signal and generates said vehicle bus signal as a function of said at least one of said signals.

4 The system of claim 1 further comprising a vehicle warning interface receiving said signal for activating said vehicle system from said controller, said vehicle warning interface activating said vehicle system in response to said signal for activating said vehicle system.

5 The system of claim 4, wherein said vehicle system comprises at least one of a dashboard light, a light guide, an LED, a radio, a

speaker, a pre-crash warning system, a heads-up display, or a passive restraint system.

6 The system of claim 1 further comprising a fifth magneto-resistive sensor coupled to a third portion of the driver-side of the host vehicle, said fifth magneto-resistive sensor sensing a fifth magnetic field variation in a fifth sensor area and generating a fifth sensor signal therefrom; and

a sixth magneto-resistive sensor coupled to a third portion of the passenger-side of the host vehicle sensing a sixth magnetic field variation in a sixth sensor area and generating a sixth sensor signal therefrom,

wherein said controller receives at least one of said first sensor signal, said second sensor signal, said third sensor signal, said fourth sensor signal, said fifth sensor signal or said sixth sensor signal, said controller generating said signal for activating said vehicle system in response to said at least one of said signals.

7 The system of claim 6, wherein said first portion of said driver side and said first portion of said passenger side comprise portions near the front end, said second portion of said driver side and said second portion of said passenger side comprise portions between the front end and the rear end, and said third portion of said driver side and said third portion of said passenger side comprise portions near the rear end.

8 The system of claim 1, wherein said first sensor is coupled to at

least one of an area near a rear of the vehicle, an area near a middle of the vehicle, an area near a front of the vehicle, a trunk lid, a tailgate, a hood, a bumper, an area above tires of the vehicle, or an area within vehicle side panels.

9 The system of claim 1, wherein said controller further comprises at least one of a signal conditioning algorithm, a temporal and signal strength correlation algorithm, a vehicle state definition algorithm, or a countermeasure state definition algorithm for generating said signal for activating said vehicle system.

10 The system of claim 9, wherein said temporal and signal strength correlations algorithms is used in conjunction with a threshold comparison to assess a probability of an accident.

11 A method for operating a lane change aid detection system for a host vehicle comprising:

sensing magnetic field changes, caused by a target object in or near a vehicle destination lane, within a sensor array having a detection range covering an area adjacent a full near zone of the host vehicle;

processing at least one algorithm as a function of said magnetic field changes; and

activating a countermeasure in response to signals indicating a target vehicle in or near said vehicle destination lane as a function of said processing of said at least one algorithm.

12 The method of claim 11 further comprising receiving a vehicle control signal;
generating a vehicle bus signal from said vehicle control signal; and
processing said at least one algorithm as a function of said vehicle bus signal.

13 The method of claim 12, wherein said vehicle bus receives at least one of a vehicle type information signal, a vehicle speed signal, an RPM signal, a heading of host vehicle signal, a location of vehicle signal, a host vehicle directional signal, a steering wheel angle signal, or a brake status signal and generates said vehicle bus signal as a function of said at least one of said signals.

14 The method of claim 11, wherein processing further comprises determining required countermeasures necessary to reduce a likelihood of an accident.

15 The method of claim 11, wherein processing further comprises processing a magnetic signal conditioning algorithm for filtering and smoothing said magnetic field signature.

16 The method of claim 11, wherein processing further comprises processing a temporal and signal strength correlation algorithm for analyzing said magnetic field signature for determining a proximity and size of said target object.

17 The method of claim 11, wherein processing further comprises processing a vehicle state definition algorithm whereby a state of the host vehicle in relation to said target object is determined.

18 The method of claim 11, wherein processing further comprises processing a countermeasure state definition algorithm for determining whether a countermeasure is required and which countermeasure may be required.

19 A lane change aid detection system for a host vehicle comprising:

a first array of magneto-resistive sensors coupled along a driver-side of the host vehicle and sensing a first array of sensor areas covering a near driver-side area extending at least a length of said driver-side and an area adjacent thereto, said first array of magneto-resistive sensor sensing a first magnetic field variation in said first array of sensor areas, at least one of said first array of magneto-resistive sensors generating a first sensor signal therefrom;

a second array of magneto-resistive sensors coupled along a passenger-side of the host vehicle and sensing a second array of sensor areas including a near passenger-side area covering at least a length of said passenger-side and an area adjacent thereto, said second array of magneto-resistive sensor sensing a second magnetic field variation in said second array of sensor areas, at least one of said second array of magneto-resistive

sensors generating a second sensor signal therefrom;

a vehicle bus receiving various vehicle control signals and generating therefrom a vehicle bus signal;

a vehicle warning interface receiving a signal for activating said vehicle system, said vehicle warning interface activating said vehicle system in response to said signal for activating said vehicle system; and

a controller coupled to the host vehicle receiving said first sensor signal, said second sensor signal, and said vehicle bus signal, said controller generating said signal for activating a vehicle system in response to said vehicle bus signal and at least one of said first sensor signal or said second sensor signal.

The system of claim 19, wherein said vehicle system comprises at least one of a dashboard light, a light guide, an LED, a radio, a speaker, a pre-crash warning system, a heads-up display, or a passive restraint system.